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RED RIVER OF THE NORTH 2011 FLOOD Q&A

Q. There has been major to record flooding on the Red River of the North for three years in a row; is that because of global warming/climate change?

- An assessment of the possible causes of the wet cycle that has been ongoing in the **Devils Lake, ND** area was completed last year.
  - (Ref. NOAA climate assessment at http://www.devilslake.noaa.gov/assessments/NOAA_Climate_Assessment_DevilsLake_July2010.pdf).
- The report was vetted through the USGS in Bismarck, North Dakota State Climatologist and internally in NOAA.
- Several lines of evidence lead to an assessment that the current wet epoch in the Devils Lake region is mostly part of a natural cycle of hydro-climate variability.
- The characteristic time history of this pattern is one of roughly decade-long variations, and appears not to be symptomatic of a fundamental change in the region's rainfall due to greenhouse gas effects.
- The recent extreme wet conditions thus are likely transitory in nature.
- No formal detection study has been undertaken to address whether a human-induced change in precipitation has occurred. It is noted, however, that most of the increase in annual rainfall since 1980 has resulted from heavy downpours, a feature that may be indirectly related to human activities.
- Another more broad assessment will be undertaken for the Red River Basin and completed over the next two months. While expectations as for the cause and longevity of the current wet episode are not expected to be vastly different than found in the Devils Lake area alone some important difference may be realized. It is too early to tell at the moment.

Q. Who is involved in the assessment and how is data being collected?

A. The Earth System Research Laboratory, Climate Prediction Center, National Weather Service Climate Services and the National Climatic Data Center are collaborators.

Q. Aside from examination of climate change or variability impacts, what is causing the expected flooding on the Red River this spring?

A. The Red River of the North watershed has been in a long term wet cycle since 1990, a period that includes the wettest 20-year average over Devils Lake since at least 1895 (ref. NOAA climate assessment at http://www.devilslake.noaa.gov/assessments/NOAA_Climate_Assessment_DevilsLake_July2010.pdf). Annual precipitation has been well above average most years in that period. NOAA's National Weather Service has identified several other factors that have caused the major and near record flooding:

- Heavy autumn rains have saturated soils and kept the basin wet into winter

- Saturated soils have little if any capacity to retain melting snow
- Runoff into the river system has been greater due to heavy, above normal, snowpack combined with rapid thaw cycles
- The Red's northward flow into colder latitudes often leads to ice dams and ice jams
- Extremely flat terrain of eastern North Dakota and northwest Minnesota (less than 1 foot drop in 1 mile) slows the runoff process allowing water to build up across the countryside
- Frozen drainage structures in pastures and farm ground prevent early runoff from reaching tributaries that feed the Red and other major rivers

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